PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(First Semester)

Branch - STATISTICS

DESCRIPTIVE STATISTICS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The term "statistics" is originated from? a) Latin "status" b) Greek "statistikos" c) French "statistique" d) German "Statistik"	K1	CO1
	2	The point of the interaction of the 'less than' and 'more than' O-give curve corresponds to a) Mean b) Median c) Geometric Mean d) Harmonic Mean	K2	CO1
2	3	Empirical relationship between mean, median and mode is a) Mode = 3 Median - 3 Mean b) Mode = 2 Median - 3 Mean c) Mode = 3 (Median -2 Mean) d) Mode = 3 Median - 2 Mean	K1	CO2
	4	Relate the minimum variance obtained from the Standard deviation. a) Mean square deviation b) Absolute deviation c) Root mean square deviation d) All the above observations	K2	CO2
3	5	What is the measure of kurtosis? a) $\beta_2 = 0$ b) $\beta_2 = 3$ c) $\beta_2 = 4$ d) $\beta_2 = -4$	K1	CO3
	6	The r^{th} absolute moment of the variable about the mean $\bar{x}$ is given by a) $\frac{1}{n}\sum_{i=1}^{n} f_i\lvert x_i - \bar{x}\rvert^r$ b) $\frac{1}{N}\sum_{i=1}^{n} f_i\lvert x_i - \bar{x}\rvert^r$ c) $\frac{1}{n}\sum_{i=1}^{n} f_i\lvert \bar{x} - x_i\rvert^r$ d) $\frac{1}{N}\sum_{i=1}^{n} f_i\lvert \bar{x} - x_i\rvert^r$	K2	CO3
4	7	Probability error of r is a) $0.6745\ \frac{1-r^2}{\sqrt{n}}$ b) $0.6745\ \frac{1+r^2}{\sqrt{n}}$ c) $0.6547\ \frac{1-r^2}{n}$ d) $0.6754\ \frac{1-r^2}{n}$	K1	CO4
	8	If one regression coefficient is greater than unity than the other must be a) Greater than the first one b) Equal to unity c) Less than unity d) Equal to zero	K2	CO4
5	9	In the equation $Y = a + bx + cx^2$, what does "c" represent? a) Y-intercept b) Slope of the line c) Coefficient of the quadratic term d) Constant	K1	CO5
	10	Which function in Excel is used to calculate the mean of a dataset? a) AVERAGE( ) b) MEAN( ) c) MEDIAN( ) d) MODE( )	K2	CO5

SECTION - B (35 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Write the functions of statistics.	K3	CO1
		(OR)		
	11.b.	Draw a Histogram and find the modal wage.		

Weekly Wage in Rs. (Mid Value)	310	330	350	370	390
No. of Labourers	25	50	75	60	15

Cont...

<table>
<tr><td rowspan="2">2</td><td>12.a.</td><td>Calculate mean, median and mode for the following frequency distribution.
<table>
<tr><td>Variable</td><td>10-13</td><td>13-16</td><td>16-19</td><td>19-22</td><td>22-25</td><td>25-28</td><td>28-31</td><td>31-34</td><td>34-37</td><td>37-40</td></tr>
<tr><td>Frequency</td><td>8</td><td>15</td><td>27</td><td>51</td><td>75</td><td>54</td><td>36</td><td>18</td><td>9</td><td>7</td></tr>
</table></td><td rowspan="2">K2</td><td rowspan="2">CO2</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td rowspan="2"></td><td>12. b.</td><td>An analysis provides the monthly wages with the following results
<table>
<tr><td></td><td>Firm A</td><td>Firm B</td></tr>
<tr><td>Number of workers</td><td>500</td><td>600</td></tr>
<tr><td>Average monthly wages</td><td>186</td><td>175</td></tr>
<tr><td>Variance of the distribution of wages</td><td>81</td><td>100</td></tr>
</table>
(i) Which firm has a larger wage bill?
(ii) In which, Firm gives greater variability in individual wages.</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">3</td><td>13.a.</td><td>The first four moments of a distribution about the value 4 of a variable are -1.5, 17, -30 and 108. Find the arithmetic mean, Variance, μ_3 and μ_4.</td><td rowspan="3">K1</td><td rowspan="3">CO3</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>13.b.</td><td>Compare the skewness of A and B& give your results.
<table>
<tr><td></td><td>Q_1</td><td>M</td><td>Q_3</td></tr>
<tr><td>Series A</td><td>40</td><td>60</td><td>80</td></tr>
<tr><td>Series B</td><td>62.85</td><td>65.25</td><td>72.15</td></tr>
</table></td></tr>
<tr><td rowspan="3">4</td><td>14.a.</td><td>10 trainees were ranked at the beginning (X) and at the end(Y) of a course which are given below:
<table>
<tr><td>Trainees</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td><td>G</td><td>H</td><td>I</td><td>J</td></tr>
<tr><td>X</td><td>1</td><td>6</td><td>3</td><td>9</td><td>5</td><td>2</td><td>7</td><td>10</td><td>8</td><td>4</td></tr>
<tr><td>Y</td><td>6</td><td>8</td><td>3</td><td>7</td><td>2</td><td>1</td><td>5</td><td>9</td><td>4</td><td>10</td></tr>
</table>
Calculate Rank correlation co-efficient.</td><td rowspan="3">K3</td><td rowspan="3">CO4</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>14.b.</td><td>Define Regression and differentiate it from correlation.</td></tr>
<tr><td rowspan="3">5</td><td>15.a.</td><td>Fit a straight line to the following data.
<table>
<tr><td>X</td><td>2</td><td>3</td><td>5</td><td>8</td><td>10</td></tr>
<tr><td>Y</td><td>5</td><td>6</td><td>10</td><td>18</td><td>21</td></tr>
</table></td><td rowspan="3">K1</td><td rowspan="3">CO5</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>15.b.</td><td>Write the utility of the following statistical functions in Excel
(i) VAR( ) (ii) LINEST( ) (iii) SUMIF ( )
(iv) MAX ( ) (v) MIN ( )</td></tr>
</table>

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	a) Distinguish between primary and secondary data. b) Explain the applications of diagrams and graphs and state their advantages.	K5	CO1
2	17	a) Establish the relationship between arithmetic mean, geometric mean and harmonic mean. b) Daily earnings in Rs.(x) of 10 labourers are given below. Calculate all the three mean deviation and the corresponding relative measures. x: 32, 51, 23, 46, 20, 78, 57, 56, 57, 30	K6	CO2
3	18	The first four moments of a distribution about the origin are 1, 4, 10 and 46 respectively. Obtain the various characteristics of the distribution and comment the nature of the distribution.	K6	CO3
4	19	The following data gives two regression equations. Find X on Y and Y on X. X: 6, 2, 10, 4, 8 Y: 9, 11, 5, 8, 7	K5	CO4
5	20	Derive the normal equations to fit a second degree parabola.	K6	CO5

Z-Z-Z END